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Computing Environment

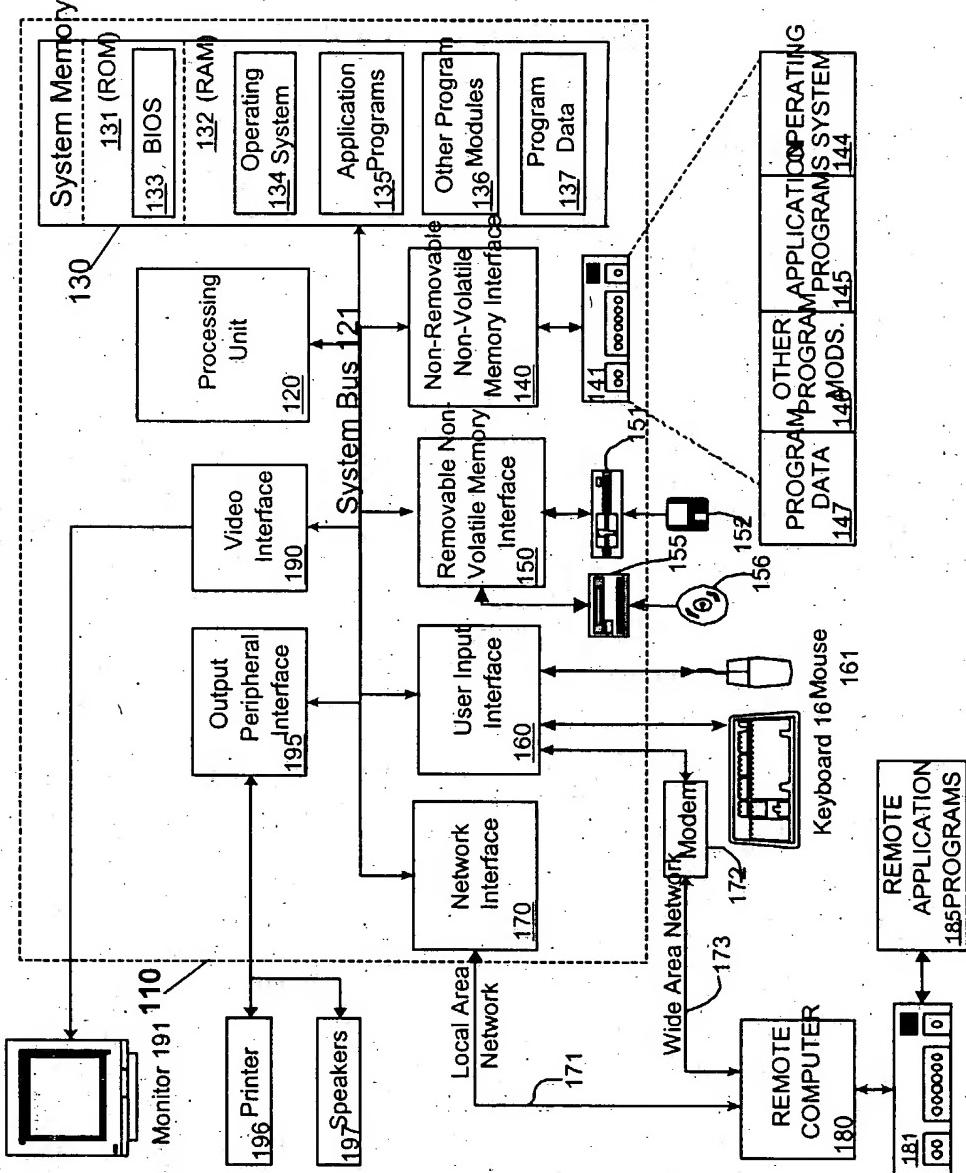


FIGURE 1

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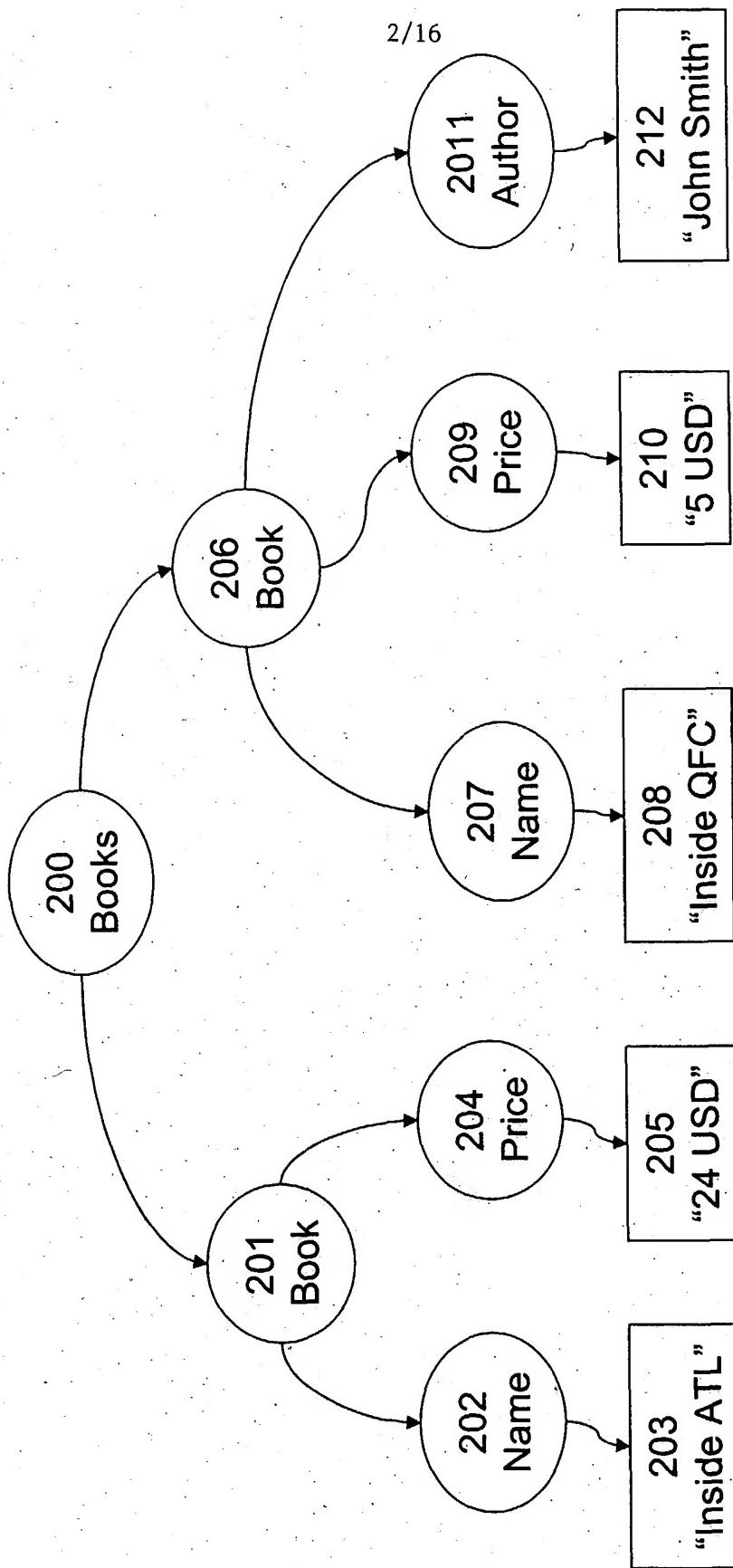


FIGURE 2A

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```
- <books>
- <book>
  - <name>Inside ATL </name>
  <price>24 USD</price>
</book>
- <book>
  - <name>Inside QFC</name>
  <price>5 USD</price>
  <author>John Smith</author>
</book>
</books>
```

Serialized representation of hierarchical document of Figure 2A in XML format

FIGURE 2B

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00000000	3C	62	6E	6F	6B	73	3E	3C	62	6F	6B	3E	3C	61	<books><book><name>Inside ATI </name><price>24 U			
00000010	6D	65	3E	49	6E	73	69	64	65	20	41	54	4C	3E	3C	2F	55	SD</price></book>
00000020	6E	61	6D	65	3E	70	72	69	63	65	3E	32	34	20	55	73	<book><name>Ins	
00000030	53	44	3C	2F	70	72	69	63	65	3C	2F	62	6F	6F	6B	6B	ide QFC</name><price>5 USD</price>	
00000040	3E	3C	62	6F	6F	6B	3E	3C	6E	61	6D	65	3E	49	6E	70	rice>5 USD</price>	
00000050	69	64	65	20	51	46	43	3C	2F	6E	61	6D	65	3E	3C	2F	John S	
00000060	72	69	63	65	3E	35	20	55	53	44	3C	2F	70	72	69	63	mith</author></book></books>	
00000070	65	3E	3C	61	75	74	68	6F	72	3E	4A	6F	68	6E	20	53		
00000080	6D	69	74	68	3C	2F	61	75	74	68	6F	72	3E	3C	2F	62		
00000090	6F	6F	6B	3E	3C	2F	62	6F	6B	73	3E	6F	6B	73	3E	62		

FIGURE 2C

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```
Token 1: Begin contain r node "books"
Token 2: Begin container node "book"
Token 3: Begin container node "name"
Token 4: Value node "Inside ATL"
Token 5: End container node "name"
Token 6: Begin container node "price"
    Token 7: Value node "24 USD"
Token 8: End container node "price"
Token 9: End container node "book"
Token 10: Begin container node "book"
Token 11: Begin container node "name"
    Token 12: Value node "Inside QFC"
Token 13: End container node "name"
Token 14: Begin container node "price"
    Token 15: Value node "5 USD"
Token 16: End container node "price"
Token 17: Begin container node "author"
    Token 18: Value node "John Smith"
Token 19: End container node "author"
Token 20: End container node "book"
Token 21: End container node "books"
```

FIGURE 2D

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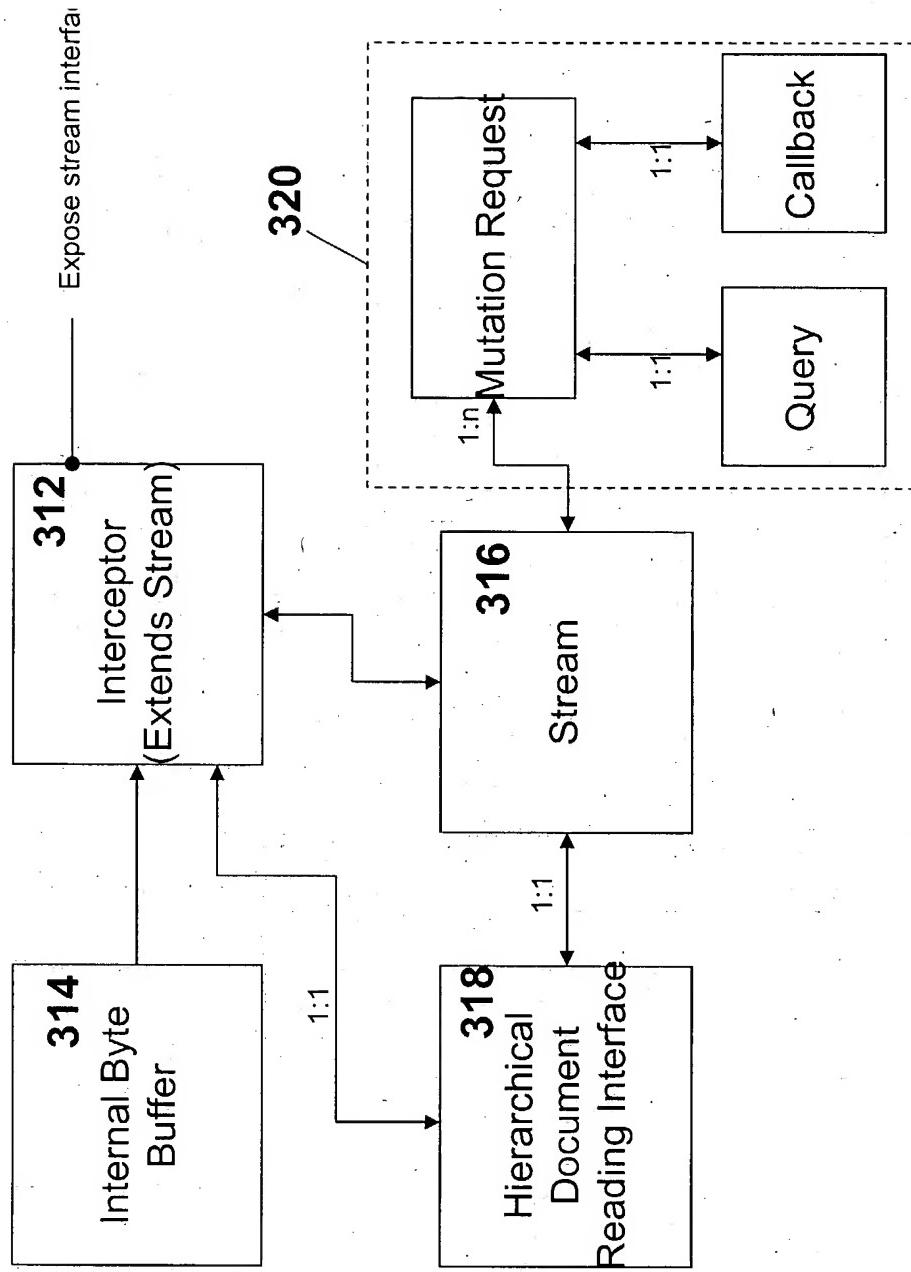


FIGURE 3A

Mutating Interceptor Class Diagram

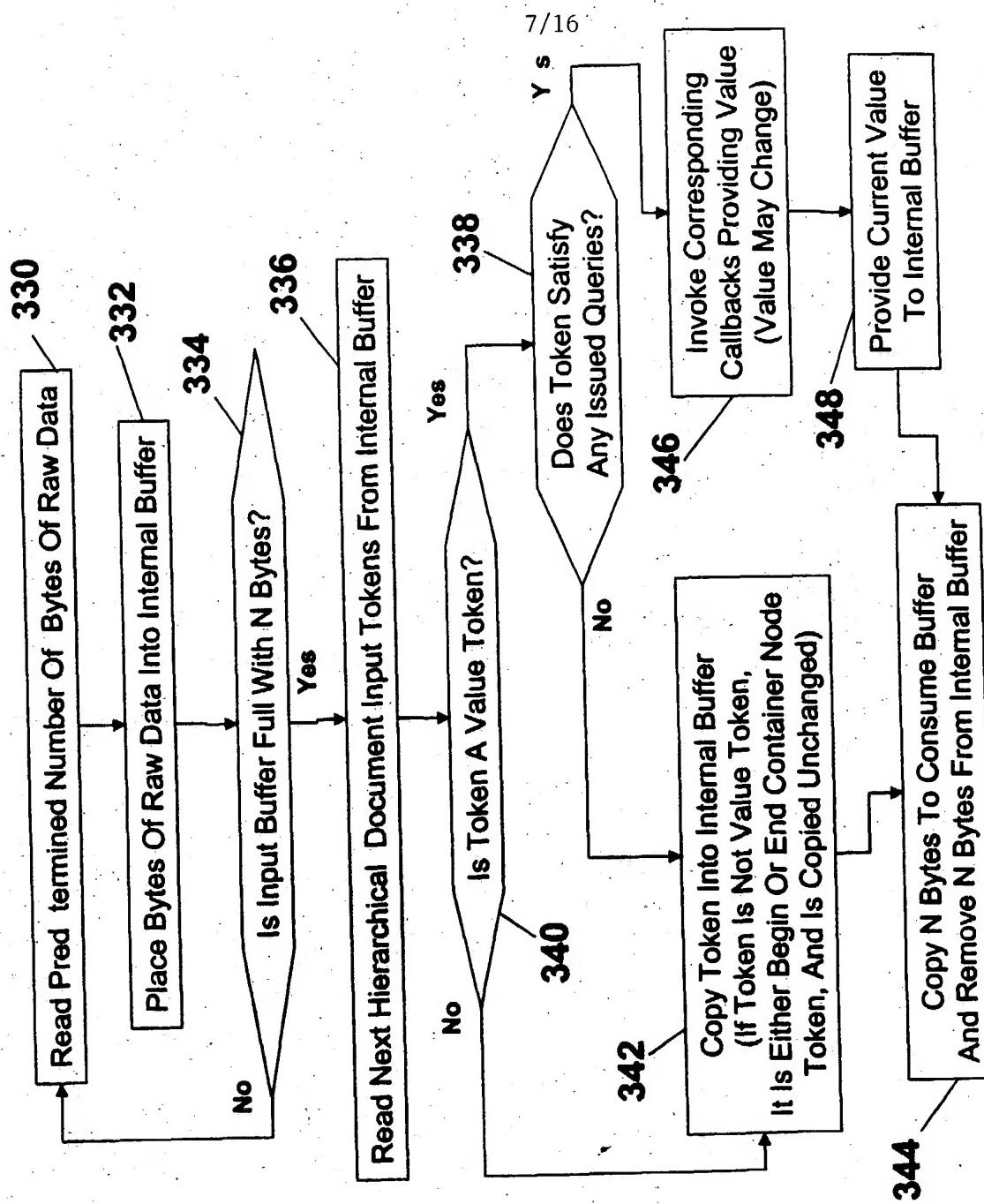
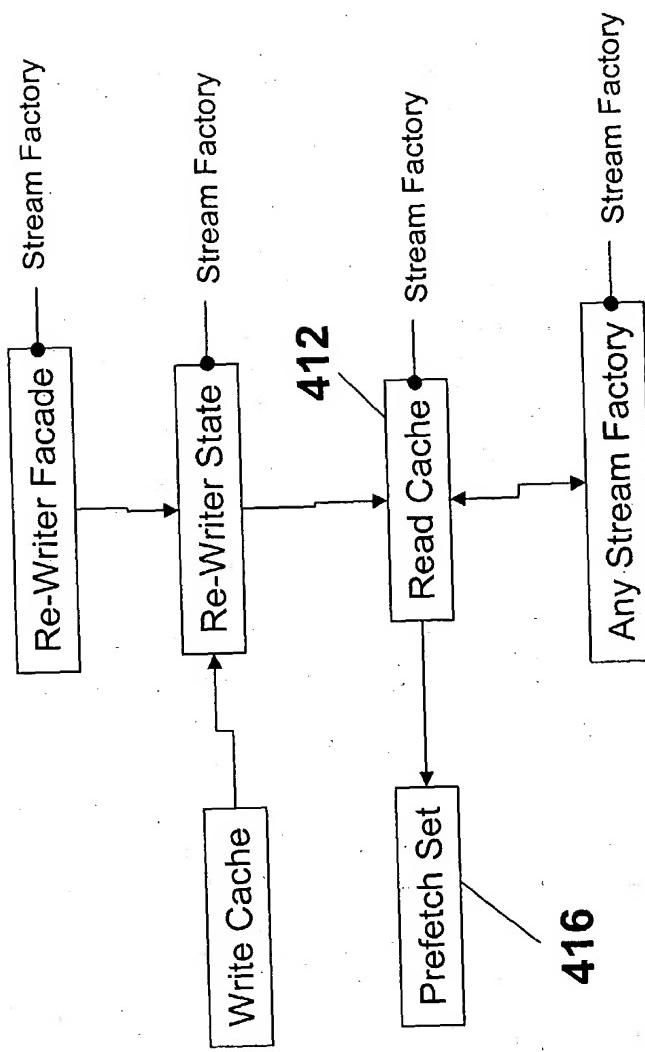


FIGURE 3B

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Re-Writer Class Diagram

FIGURE 4

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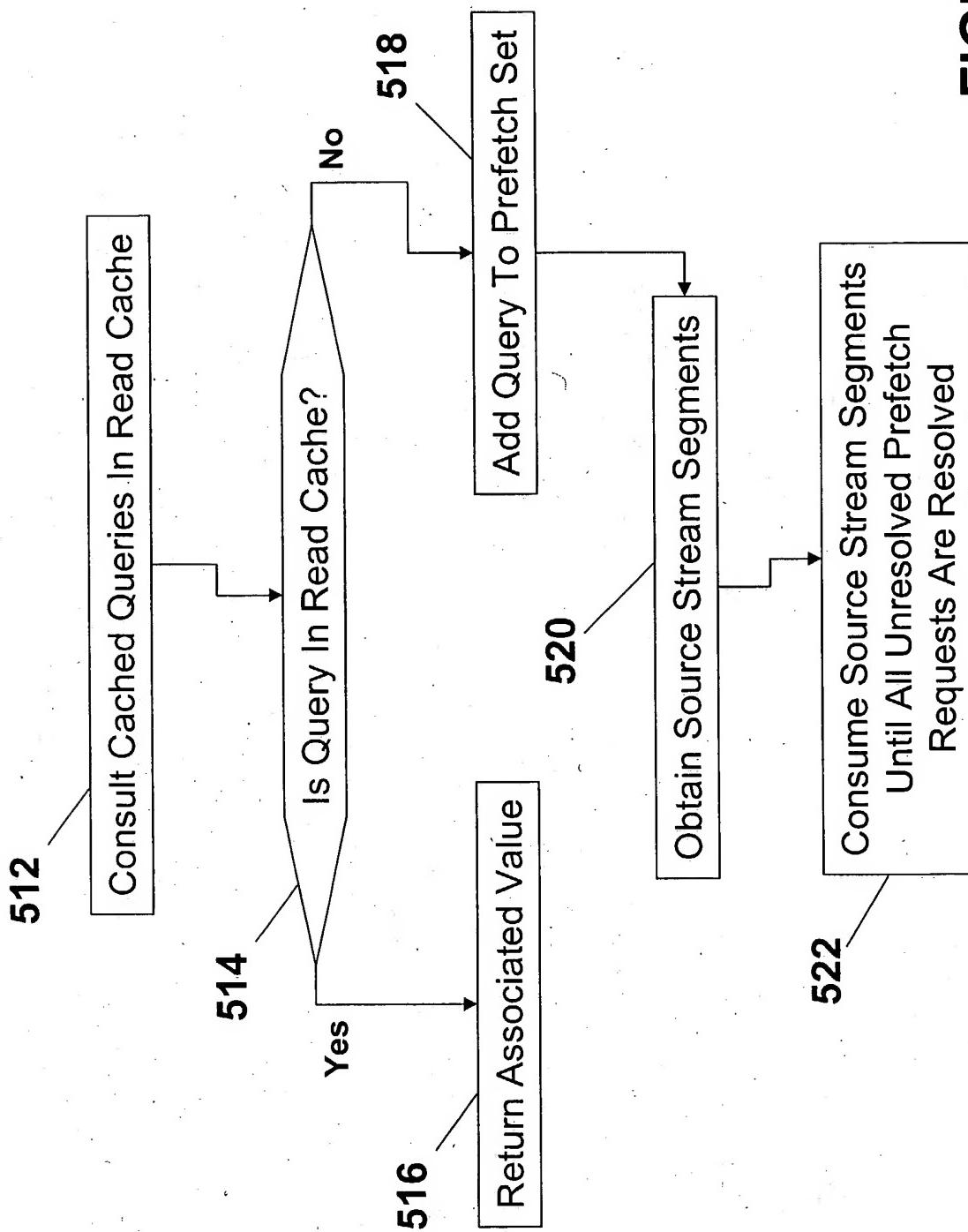


FIGURE 5

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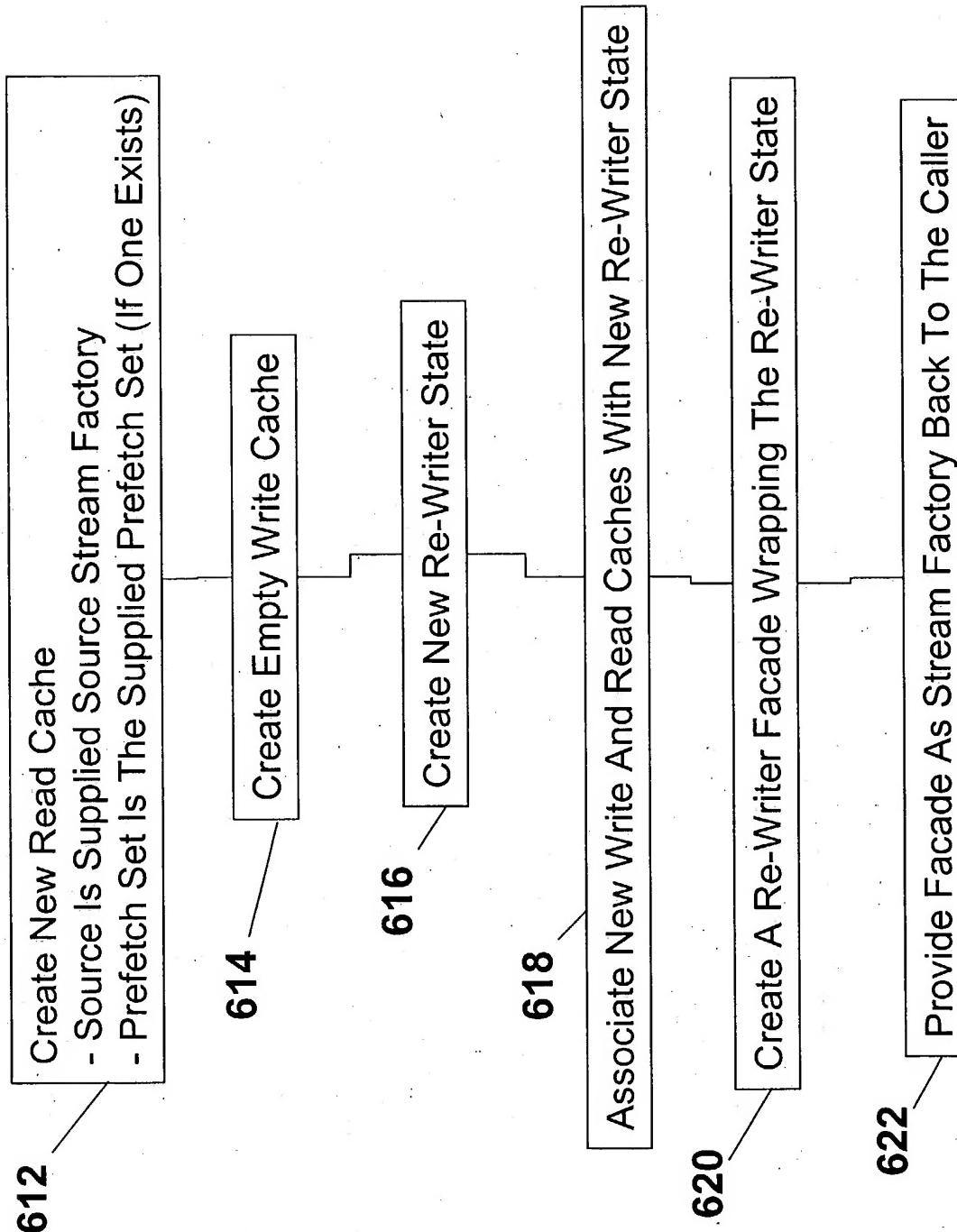


FIGURE 6

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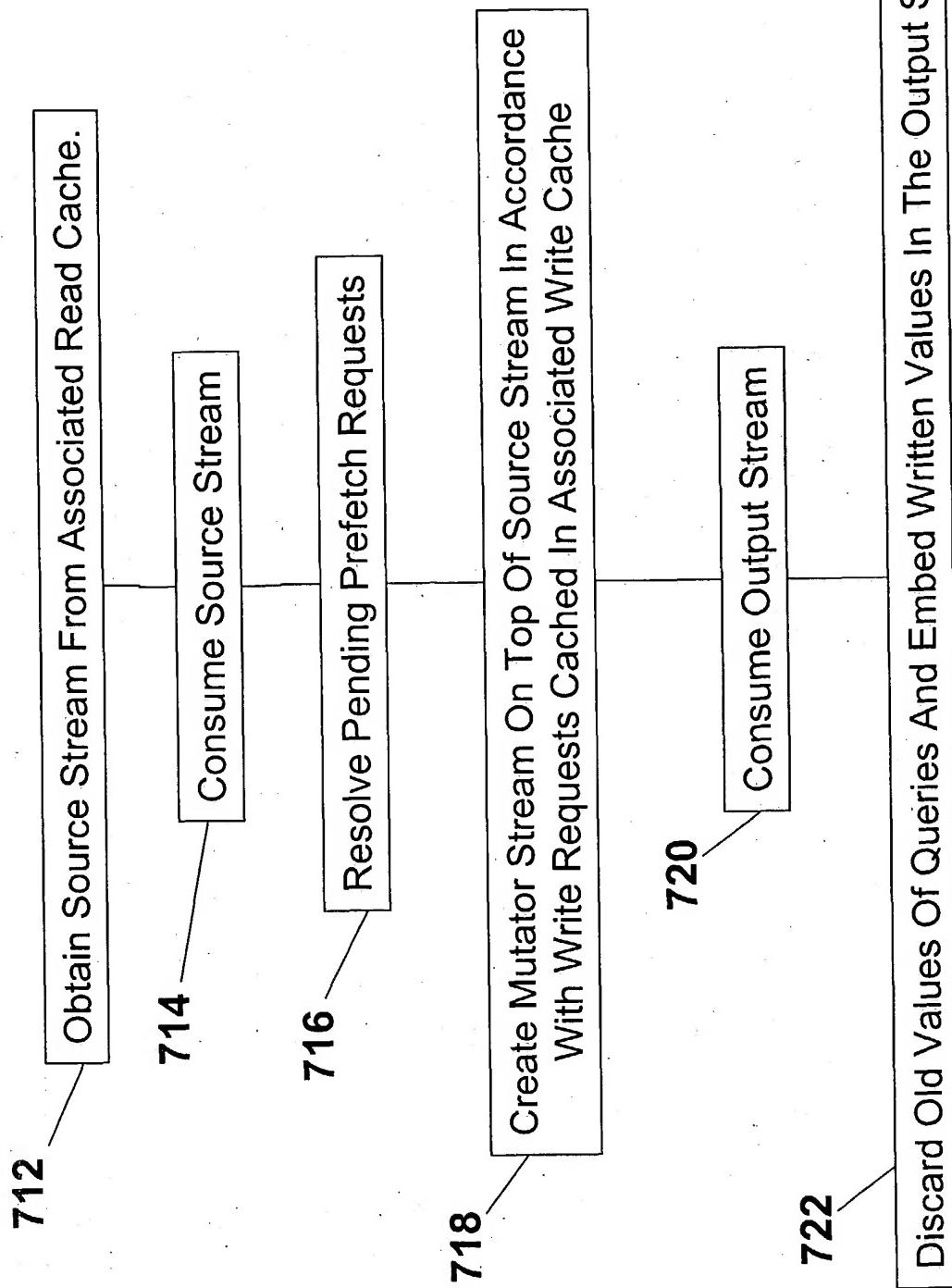


FIGURE 7

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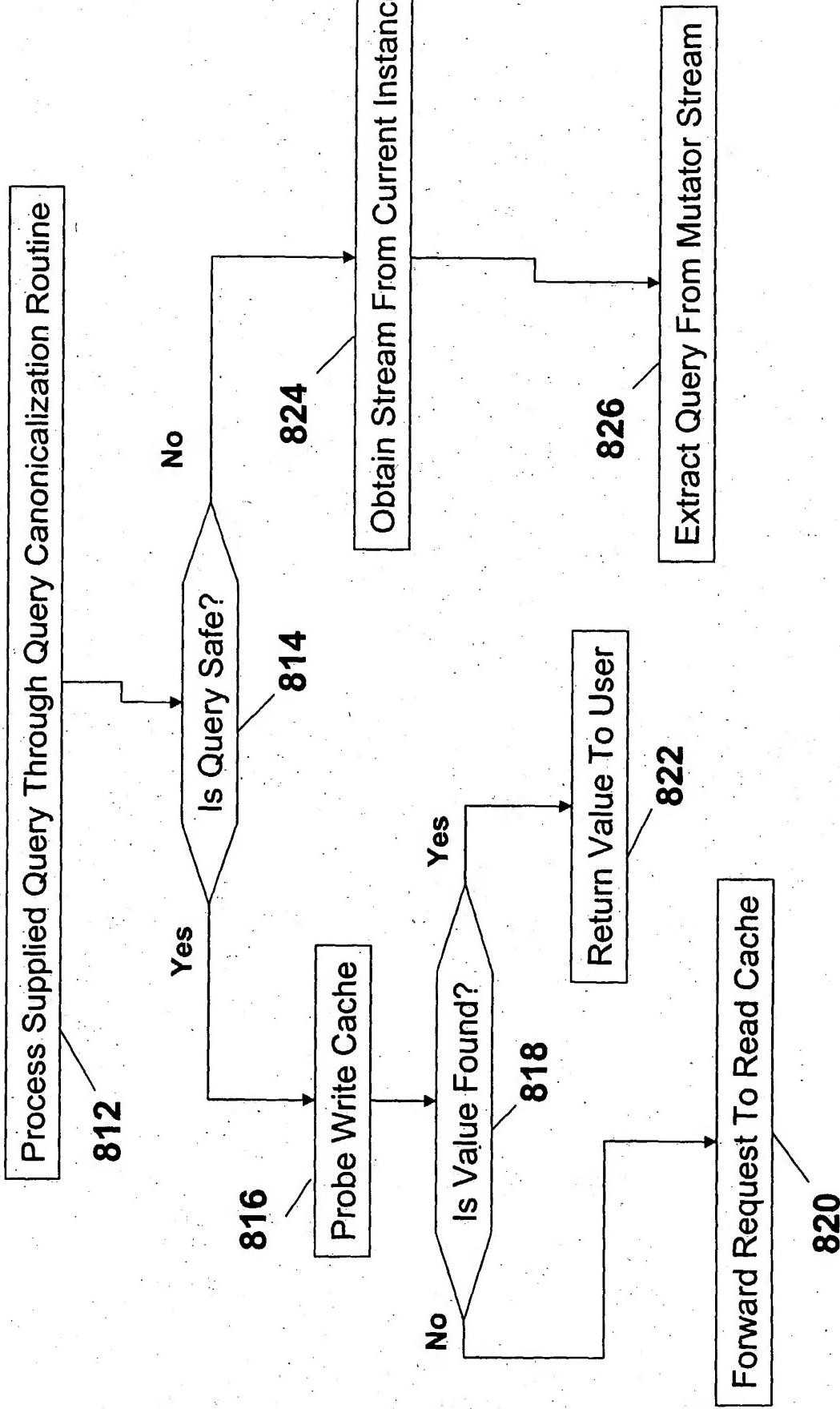


FIGURE 8

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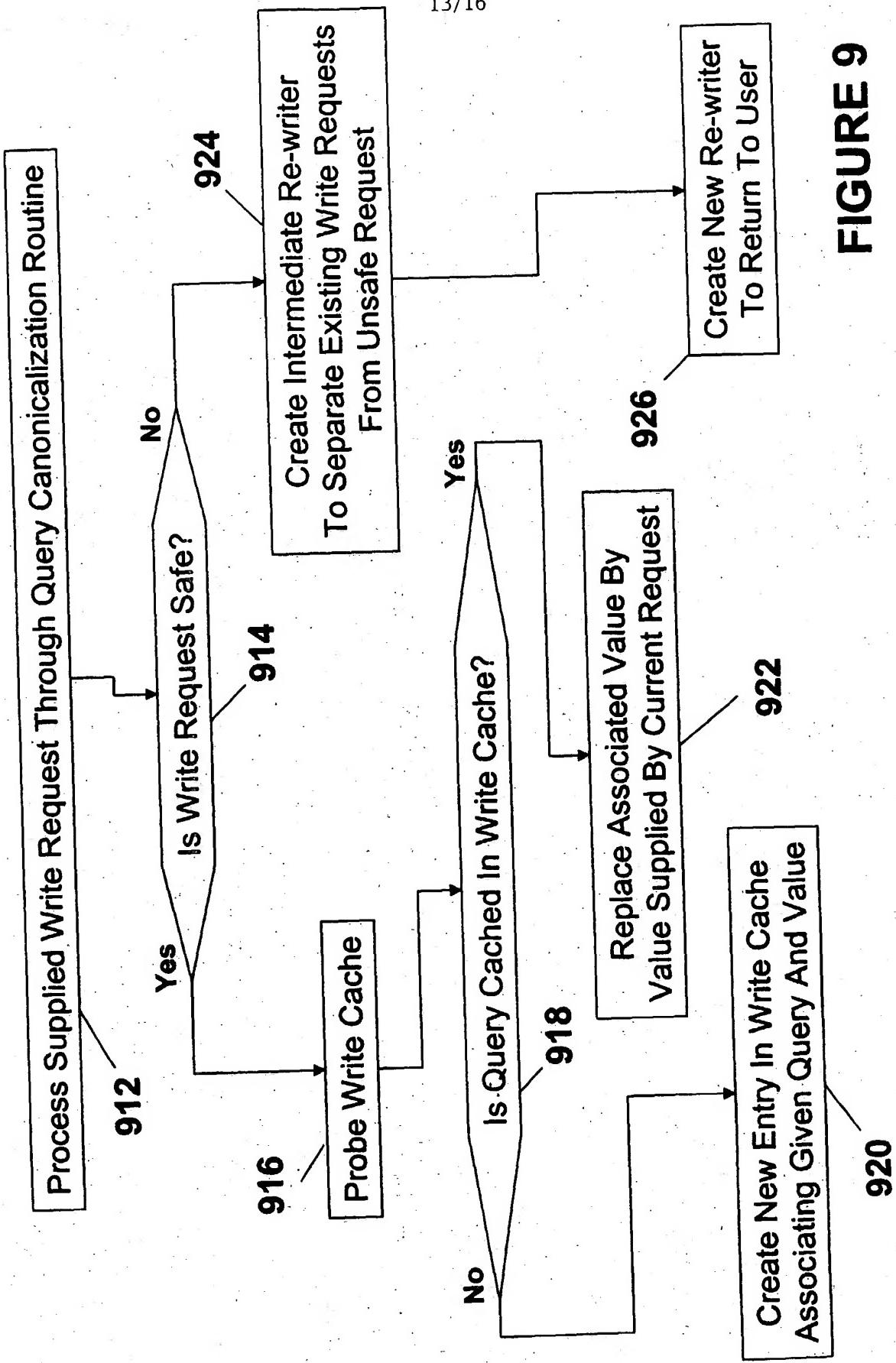


FIGURE 9

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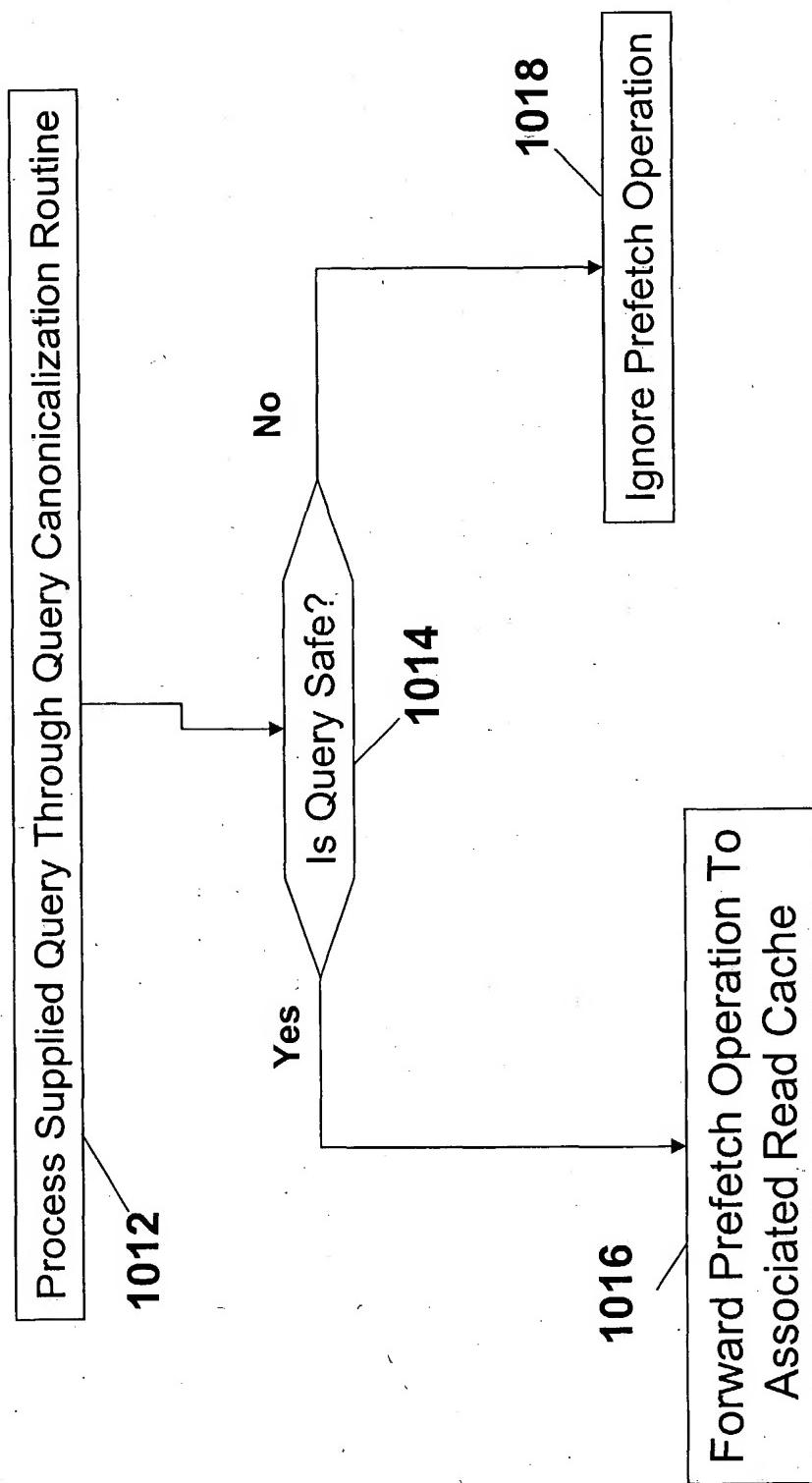


FIGURE 10

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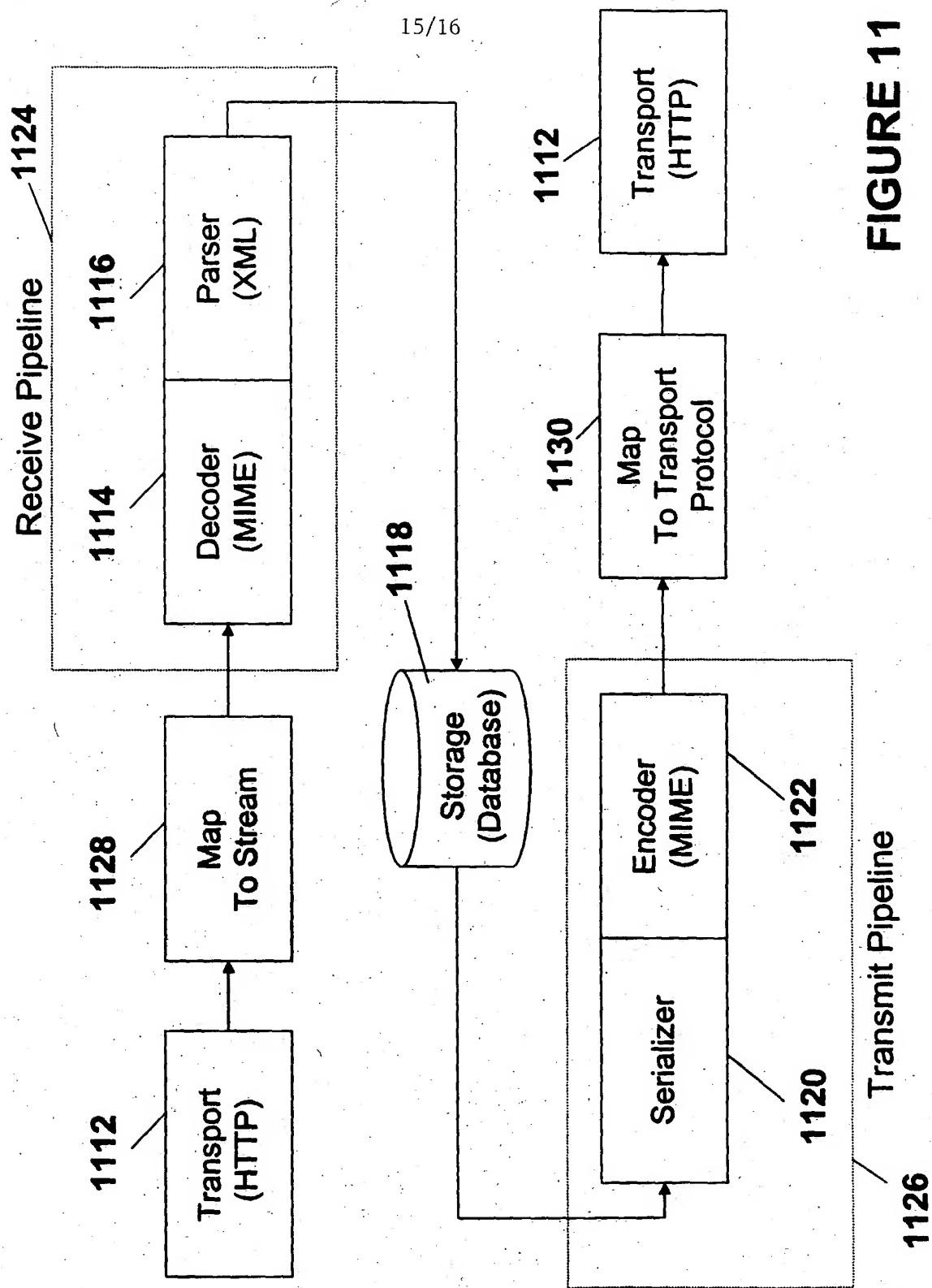


FIGURE 11

Transmit Pipeline

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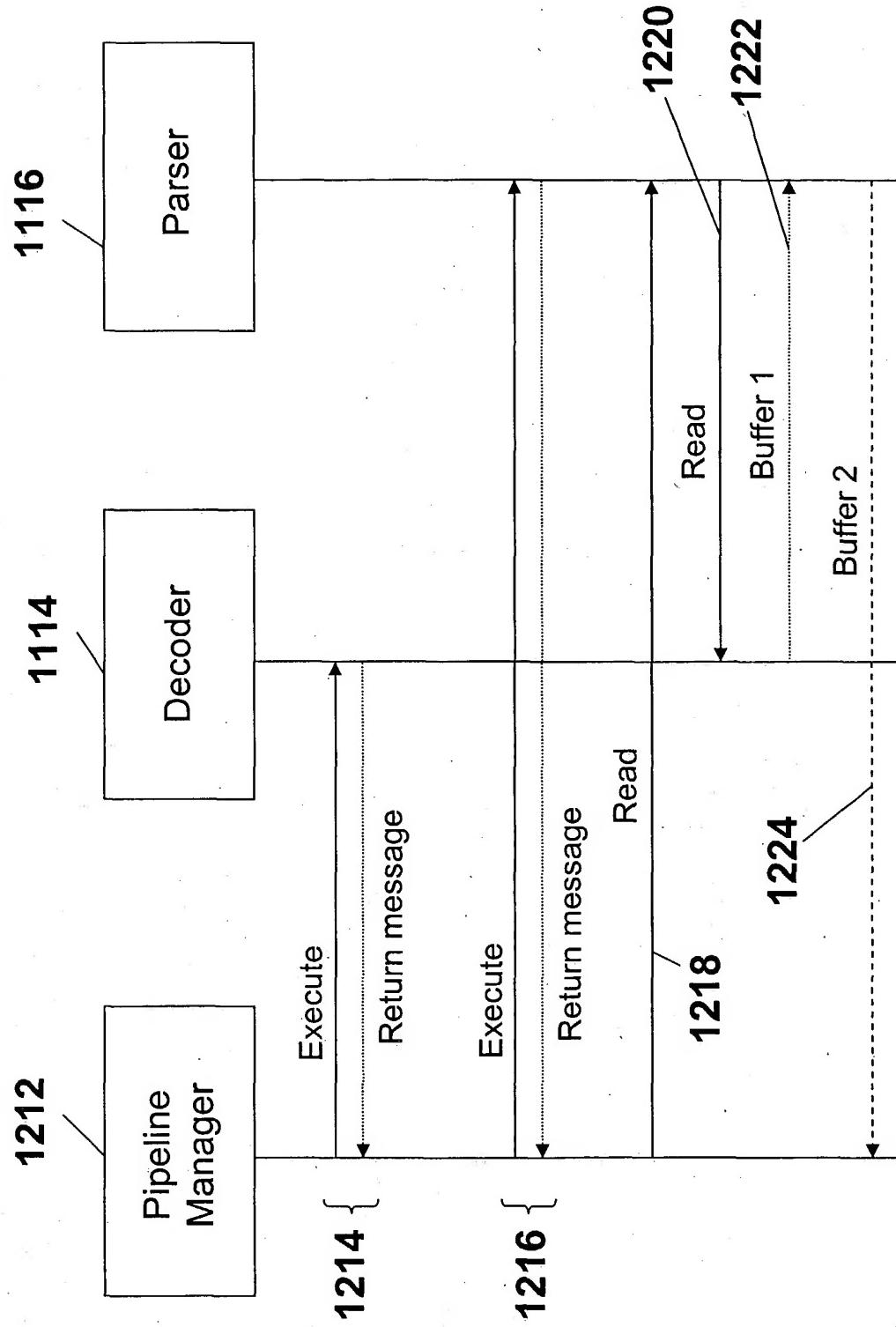


FIGURE 12